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10/585,450

07/07/2006

Shoji Akatsuka

Q89687

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SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

GISSEL, GUNNAR J

ART UNIT

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2856

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/585,450 | <b>Applicant(s)</b><br>AKATSUKA ET AL. |  |
|                              | <b>Examiner</b><br>Gunnar J. Gissel  | <b>Art Unit</b><br>2856                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6-9 is/are rejected.
- 7) ☐ Claim(s) 2,5 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/07/2006</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 6,178,806 to Isao Watanabe (Watanabe).

Regarding Claim 6, Watanabe discloses a method of producing a gas sensor having a sensor element extending in an axial direction and having a front end side to face a measured gas (Watanabe, figure 1, side 31), a metallic housing and holding therein the sensor element, a tubular metallic member provided to a rear end side of the metallic housing (Watanabe, metallic housing 31), at least one lead wire extending from an inside to an outside of the tubular metallic member and having a conductor wire electrically connected to the sensor element and an insulating film covering the conductor wire (Watanabe, lead wire 16, 18, 19), and an elastic seal member having a lead wire insertion hole into which the lead wire is inserted, the method characterized by comprising (Watanabe, elastic seal member 2): a disposition step of disposing the elastic seal member inside the tubular metallic member so that the a portion of the elastic seal member protrudes outward from a rear end of the tubular metallic member; and a crimping step of crimping at least a portion of the tubular metallic member radially inward and thereby compressively deforming the elastic seal member (Watanabe,

column 1, lines 45-51)(Fujita, paragraph 46); wherein the crimping step is performed under a condition where a space between the rear end of the tubular metallic member and the outer circumferential surface of the elastic seal member corresponding in position to the rear end of the tubular metallic member is larger than a space between an inner circumferential surface of a portion to be crimped of the tubular metallic member and the outer circumferential surface of the elastic seal member corresponding in position to the portion to be crimped of the tubular metallic member (Watanabe, figure 1).

Regarding Claim 7, Watanabe discloses a gas sensor comprising: a sensor element extending in an axial direction and having a front end side to face a measured gas (Watanabe, figure 1, side 31); a metallic housing holding therein the sensor element (Watanabe, metallic housing 31); a tubular metallic member provided to a rear end side of the metallic housing (Watanabe, figure 1); at least one lead wire extending from an inside to an outside of the tubular metallic member and having a conductor wire electrically connected to the sensor element and an insulating film covering the conductor wire (Watanabe, lead wire 16, 18, 19); and an elastic seal member having a lead wire insertion hole into which the lead wire is inserted, wherein a space is provided between the rear end of the tubular metallic member and the outer circumferential surface of the elastic seal member (Watanabe, elastic seal member 2).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1- rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of US Patent Application Publication 2003/0150254 to Yasuhiro Fujita (Fujita).

Regarding Claims 1, 3 and 4, Watanabe discloses a method of producing a gas sensor having a sensor element extending in an axial direction and having a front end side to face a measured gas (Watanabe, figure 1, side 31), a metallic housing holding therein the sensor element (Watanabe, metallic housing 31), a tubular metallic member provided to a rear end side of the metallic housing (Watanabe, tubular metallic member 12, 13), at least one lead wire extending from an inside to an outside of the tubular metallic member and having a conductor wire electrically connected to the sensor element and an insulating film covering the conductor wire, and an elastic seal member having a lead wire insertion hole into which the lead wire is inserted (Watanabe, lead wire 16, 18, 19), and that there is a crimping step (Watanabe, column 11, lines 45-51), but Watanabe does not explicitly disclose the elastic seal member having the exact shape of applicant's claim.

Fujita discloses the method comprising: a disposition step of preparing the elastic seal member having a main body portion and a smaller diameter portion smaller in outer diameter than the main body portion, disposing the entire main body portion and a part of the smaller diameter portion inside the tubular metallic member and allowing a remaining part of the smaller diameter portion to protrude outward from a rear end of the tubular metallic member (Fujita, elastic seal member 11); and a crimping step of

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crimping at least a portion of the tubular metallic member radially inward and thereby compressively deforming the elastic seal member (Fujita, paragraph 46). Fujita also discloses the smaller diameter portion of the elastic seal member before compressive deformation has a nearly cylindrical section and a connecting section connecting between the cylindrical section and the main body portion and increasing in outer diameter gradually toward the main body portion (Fujita, figure 2). Fujita further discloses the outer circumferential surface of the smaller diameter portion of the elastic seal member before compressive deformation tapers toward a rear end side (Fujita, figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Watanabe with teachings from Fujita because Fujita's seal member allows for impermeability to water and oil, as well as preventing the accumulation of dust on the filter (Fujita, paragraph 5).

Regarding Claims 8 and 9, Watanabe discloses a gas sensor, but does not explicitly disclose that the elastic seal member has a space provided between the rear end of the tubular metallic member and the smaller diameter portion or that the tubular member includes a fixing portion having a space between the larger diameter portion and the elastic seal member.

Fujita discloses the elastic seal member includes a main body portion disposed inside the tubular metallic member and a smaller diameter portion disposed at the more rear end side than the main body portion and smaller in outer diameter than the main body portion, and the space is provided between the rear end of the tubular metallic

member and the smaller diameter portion (Fujita, Figure 2) and, the tubular metallic member includes a fixing portion that fixes the elastic seal member to an inside thereof and a larger diameter portion disposed at the more rear end side than the fixing portion and larger in inner diameter than the fixing portion, and the space is formed between the larger diameter portion and the elastic seal member (Fujita, figure 6).

It would have been obvious to one of ordinary skill to combine Watanabe with teachings from Fujita because Fujita's refinement prevents the destruction of the seal at the hands of high pressure water or stones (Fujita, paragraph 10).

#### ***Allowable Subject Matter***

5. Claims 2, 5 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 2008/0121020 concerns a gas sensor. US 6,945,091 concerns a gas sensor protective cover. US 6,258,234 concerns a gas sensor. US 2005/0138989 concerns a gas sensor. US 2004/0040370 concerns a gas sensor's connector. US 2002/010312 concerns a crimped gas sensor. US 5,859,361 concerns an air-fuel ratio sensor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gunnar J. Gissel whose telephone number is (571)274-3411. The examiner can normally be reached on Mon-Fri, 7:30AM-5:00PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571)272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GJG/

7/22/2008

/Hezron Williams/

Supervisory Patent Examiner, Art Unit 2856